

WATER FROM AIR

A LIFE-CHANGING INNOVATION

An essential and life-sustaining element, water is drawn from many sources – the ground, reservoirs, plants and the sea. Although some 70 percent of the Earth's surface is covered by it, much of it is saline and inaccessible. In 2006 an estimated 1.1 billion people lacked access to safe drinking water and an estimated 1.8 million fell victim to waterborne diseases. While significant progress has been made toward the Millennium Development Goal of halving the number of people without access to safe drinking water worldwide between 1990 and 2015, major challenges remain, particularly for those in isolated, rural areas.

Marc Parent, a French inventor and entrepreneur, believes his pioneering technology, which harvests the humidity in the air by using the power of the wind, offers a solution to this widespread problem. *WIPO Magazine* sat down with this inspiring inventor to learn more about his groundbreaking technology.

“This invention will allow many people to have access to... clean and healthy water everyday, simply by using the energy of the wind.”

Humans have used windmills for millennia to convert the wind's energy into power. While somewhat eclipsed in the 20th century, windmills are once again becoming a common feature of the landscape in the move towards greener, more sustainable forms of energy. Marc Parent's invention adds an innovative dimension to these iconic machines and their use. It looks like a standard windmill and works like a classic windmill insofar as it harnesses the energy of the wind to generate power. But it is singularly different in that it does not pump water; it actually produces it.

**“You give us wind,
we give you water.”**

This potentially life-enhancing innovation makes it possible to produce water by harvesting the air's humidity through a process of condensation. “It's a relatively simple technology that builds on principles of physics that have existed for thousands of years,” Mr. Parent explained. “First we harness the energy of the wind to make electricity, which is used to motor an air conditioning system in which the humidity of the air is condensed to produce water.” The machine sucks air into a system that cools a series of plates on which the humidity of the air condenses, forming water which flows into a collecting tank. “This is nothing more than a machine that makes rain,” he said.

Many parts of the world have low levels of rainfall and limited fresh water resources, but they do have high levels of humidity and wind. These are ideal conditions for Eolewater's Water Making System (WMS); one machine can produce around 1,000 liters a day given a wind speed of 35km/h and average humidity levels. The technology requires no external input apart from the wind, produces no waste and is completely ecological.

Cool magic

Fascinated by cooling systems – it's “like magic; you plug something in, on one side it's hot and on the other it's cold” – Mr. Parent was drawn to the refrigeration business. On a daily basis he was faced with the challenge of draining the build-up of condensation from the cooling systems he maintained. When he relocated to the Antilles, the house he lived in had no fixed mains water supply, so he set about finding an alternative solution. Four prototypes and 10 years later, after spending countless evenings, weekends and holidays in his garage, he developed the WMS.

Mr. Parent's vision is to be able to bring water to those most in need. “The goal is to develop a so-



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lution that makes clean water available every day to people who currently don't have access to it," he affirmed.

Water quality

As there are no guarantees that the water extracted from the air is pure, the WMS is equipped with a filtering system to remove any impurities. "The wind is like a river," Mr. Parent explained. "If someone upstream throws something into the air – pesticides, or some other product – these can be carried by the wind for thousands of kilometers. We cannot say that the air is pure anywhere so we treat it as though it were potentially polluted... the filters are installed at the base of the device which produces raw water comparable to that found in wells."

Intellectual property

Mr. Parent recognized the need to protect his invention almost from the outset. "At first I thought that this must already exist somewhere so I began doing some research," he said. On returning to France he contacted the Marseille branch of France's IP office (the *Institut national de la propriété industrielle* (INPI)) to search their patent database but found that nothing comparable had been protected. So he began sketching out the lines of his technology to show clearly how it works. Short of cash, he drafted his first patent application single-handedly. "It wasn't easy, but it passed," he said.

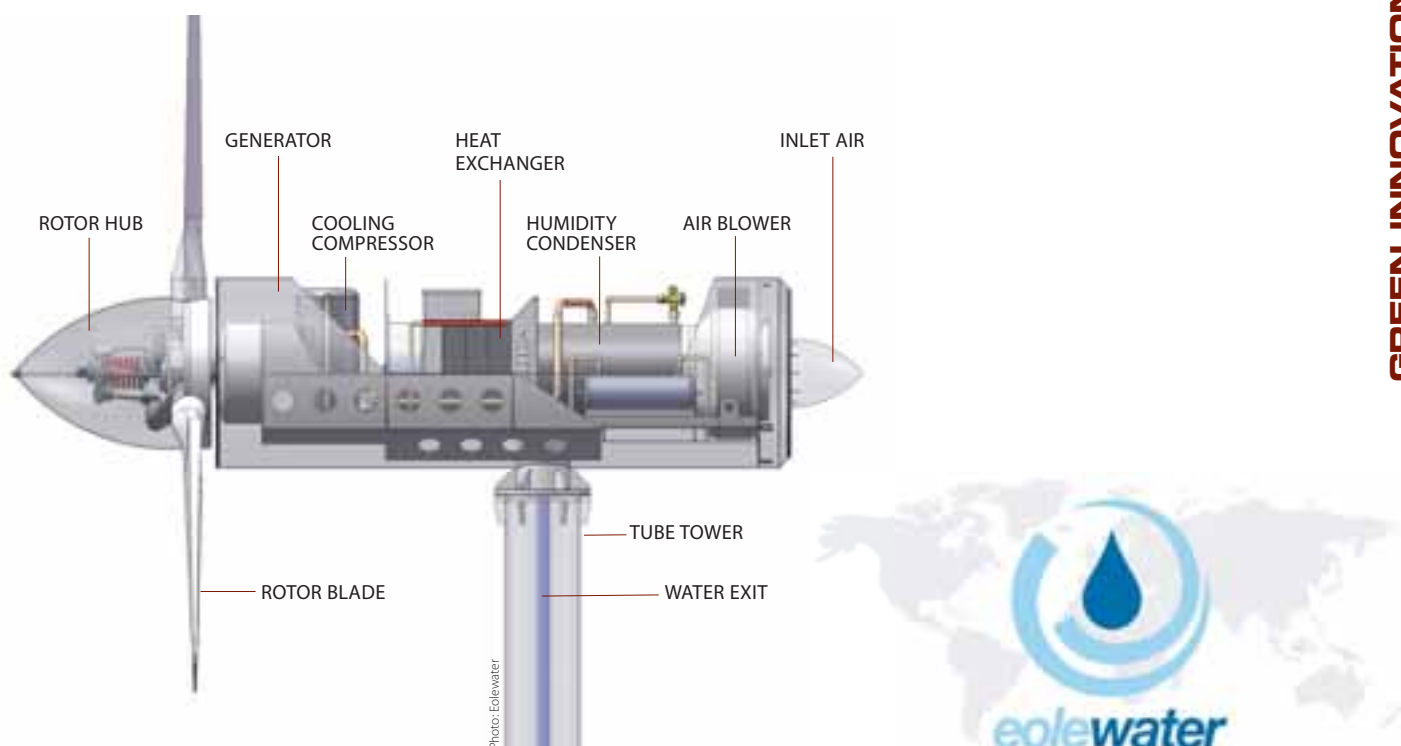
This, however, is not something he would recommend, underlining the importance of obtaining specialist advice to draft a patent application and noting, "if an idea is not well explained it can lose all its value... You need legal specialists, because a patent is halfway between technology and the law... It is a mix of the two and you can't improvise."

After filing his first patent in 2000 (in France only), he soon realized that he needed to fine-tune the technology. While it had worked well under the constant atmospheric conditions of the Antilles, he encountered some difficulties with France's intermittent wind conditions. As a consequence, he developed a more complex system that can both produce water and generate electricity using solar panels to drive the machine in the absence of wind. He subsequently filed an international application using WIPO's Patent Cooperation Treaty (PCT/FR2006/002602) – after consulting with an IP expert.

Marc Parent is unequivocal about the importance of IP to his company, Eolewater, especially in terms of attracting investment partners. "Intellectual property is indispensable," he said, "it is the key to the vault." This cannot be done single-handedly, he stressed; finance and industrial partners are needed. Investors, he discovered, were only interested if they could see that the machine worked and if they were sure the technology had been patented. "Without patents there are no investors, no commercialization," he said. "Without a patent it is not possible to make an innovative solution like this operational. Without a patent you can't attract investors, or clients to buy the right to manufacture this machine in different countries. They won't do it without the assurance, the certainty of having an exclusive right in the technology."

The challenges

Eolewater faces a number of challenges in commercializing its technology, not least because its end-users – "the people who need water, the poor who don't have access to potable water" – don't have the means to buy it. Water in short supply is a highly charged political issue. This was something Mr. Parent had not foreseen at the outset. "Water is complex; it is very political," he said. "I thought that because the idea was good it was going to take off, but that is not the case because the end-user doesn't have the means to buy the technology. It needs to be financed by governments and aid agencies."



“Water is not a luxury reserved for the rich; water is the source of life.”

The company is seeking to identify and work with national partners who share a similar worldview and a common interest in bringing clean and safe water to those most in need. “We need partners who have the same spirit and ethics and where money is not the first priority. We all have to earn a living, but money isn’t everything,” he said. “This technology is something that needs to serve the public interest.”

As an added challenge, the company has to establish itself as a credible partner. “We need to prove that we are a serious company and that the technology functions,” he said. As there is nothing comparable on the market, they need to prove it is technically sound and economically viable. “We need to keep proving ourselves,” he noted.

Eolewater also faces the challenge of scaling up its operations and the water-generating capacity of its machines. The aim is to manufacture the machines on an industrial scale, under license, in an acquiring country. While the company would retain control over production, on-site manufacturing would improve affordability and generate value for the local economy.

The future

The company is well aware of the need to continue to invest in and improve its technology, and to continue filing patents. This is an imperative, given the pace of technological development. Mr. Parent said that inventors need patents to keep ahead of the game, “You always have to do better, to progress,” he said.

The company has a number of projects in the pipeline and Mr. Parent clearly recognizes the need for his company to commercialize its technology. Not only will this safeguard the company’s long-term sustainability, it will ensure that clients have access to the most efficient and cost-effective technology. He noted that while “the creative side is fascinating,” he wants to see the technology being used by those who need it.

For Marc Parent, innovation is a vocation. He said, “It is a passion and a duty. I can’t let go because, first of all, I am stubborn and I know there is a need and it’s important. It is not a gadget; it works... There are people who could come and drink water from these machines if they existed.”